

Minutes of the METEO-France meeting of 19 January 2005 on LAM NWP (ALADIN, ALARO, AROME, MESO-NH)

The meeting was organised by the Meteo-France Research management in Toulouse, involving the Direction Générale in Paris (A. Ratier, C. Blondin) and the Forecasting service (E. Legrand). It was triggered by:

- the Prague workshop (22-26 November 2004) which failed to establish a satisfying work-plan, especially for the ALADIN-2 project, and especially in terms of physico-dynamics interface;
- several email exchanges taking place between the Prague workshop and the end of 2004, which were pointing to an insufficient level of coordination between the different LAM projects (ALARO, AROME, etc...) which have been all set up with heavy constraints on their time-tables.

Among the different weaknesses which were identified before and during this meeting, one is the fact that the ALARO prototype has been developed in 2004 in a software environment which is as close as possible to the AROME prototype. As this AROME software environment is a provisional one, which is not expected to converge to its final environment before 2008 (and is quite far from the operational environment which is familiar to the ALADIN world), this is a strong limitation for the scientists working on the ALADIN-2 who have to prepare ALARO runs.

Following a planning effort by Jean-François Geleyn just before the 19 January meeting, a list of critical scientific/technical tasks was identified in terms of work-streams (rather than in terms of ALARO project or AROME project). These tasks were then analysed in order to identify the minimum which needs to be achieved for the ALARO project and its time-table. The following points are coming out from the meeting:

- The intermediate calendar of ALARO is relaxed, i.e. no big phasing effort in 2005, but more preparation for a 2006 upgrade, to happen after the technical change to the externalised surface code and files, planned before mid-2006 (see specific plan by D. Giard, on the ALADIN web). For end 2006, the aim is now a first version of ALARO which would be an improved ALADIN, still preserving further “re-convergence” with AROME.
- A guess of the first version of the ALARO physics can be seen as follows: the use of a sophisticated micro-physics package is postponed and will be revisited in the context of the convection closure; the convection scheme is a modified version of ARPEGE/ALADIN; idem for the gravity wave drag; the radiation code is a simplified and cheap version of RRTM; use of the externalised surface (which is then the first technical jump to the ALARO code, before mid-2006). The new physical routines called in this context should be callable from the Meso-NH side as well as the ALARO side (so-called “symmetric compatibility”). This first version of the ALARO physics is based on pragmatic considerations which have nothing to do with the quality of existing models, or the performance of Meso-NH physics at 10km.
- Most of the coordination problems between ALARO and AROME are now concentrated in the routine APLAROME calling both the AROME and ALARO parameterisation routines (APLAROME routine renamed APLXX – see separate short-term plan written by François Boutier on the ALADIN web).
- Some rules on the evolution of the Meso-NH code have now been suggested (document by François Boutier – see ALADIN web). They are of the same type as the rules used for years in IFS – ARPEGE – ALADIN. They should be the guarantee that each LAM project can rely on all the other projects in terms of code, in a way which is flexible enough. Each project is expected to benefit from all the others in a symmetric way.
- The “generalised interface of interfaces” is not cancelled, but in its more ambitious form it is postponed, say beyond 2008. It is currently not compatible with the ALARO and AROME calendars, although it is potentially a very powerful tool for research in NWP and climate modelling.